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## **Committee D02 on PETROLEUM PRODUCTS AND LUBRICANTS**

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The unapproved minutes of the July 30, 2009 Sequence VI Surveillance Panel conference call.

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The meeting was called to order at 8:00pm by Chairman Charlie Leverett.

### Agenda

There was no separate agenda for this meeting. The call was to review the recommendations of the statistical group. These are the items under discussion:

- \* Recommendation on target updates
- \* Review the engine hour adjustment

### 1.0 Roll Call

The attendance list is **Attachment 1**.

## 2.0 Statistical Recommendations

- 2.1 The STAT group recommends no changes at this time.
- 2.2 Jo Martinez presentation on reference targets and engine hours is included at **Attachment 2.**

## 5.0 New Business

- 5.1 VID Test Engines
  - 5.1.1 One VID engine was run for calibration but abandoned.
  - 5.1.2 This data was included in LTMS and triggered alarms.
  - 5.1.3 There was a consensus decision that data from abandoned engines would not be included in the LTMS data. Agreement was unanimous.
- 5.2 Industry Alarms
  - 5.2.1 The Chair must act when industry alarms are triggered.
  - 5.2.2 There was discussion on adjusting the Lambda value to 0.1 but this did not make a major change.
  - 5.2.3 With the abandoned engine data removed, there should be fewer alarms.
- 5.3 Engine Hours Correction
  - 5.3.1 Most labs are generating FEI1 with the engine hours correction included.
  - 5.3.2 Afton felt there should be separate lines in Form 4 to cover an industry correction and the engine hours adjustment.

Motion: Modify Form 4 to show a line for industry correction and for engine hours correction. This would be effective 08.15.2009.

Rich Grundza, and Dave Glaenger second. Passed unanimous.

- 5.4 The D Version of the VID Engine
  - 5.4.1 The D version are shipping to labs.
  - 5.4.2 With modification for the fixed gears, these were found to have a fiber washer behind the gears.
  - 5.4.3 If needed, these will be supplied with the kits.

**Action – OHT will confirm with GM that the fiber washers are to be installed behind the gears.**

- 5.5 Draft 7 of the procedure is close to final review.

6.0 The next conference call will be per the Chairman.

7.0 The meeting adjourned at 8:25 PM.

# Attachment 1

## ASTM SEQUENCE VI SURVEILLANCE PANEL

Name	Address	Phone/Fax/Email	Attendance
Bowden, Dwight Voting Member ✓	OH Technologies, Inc. P.O. Box 5039 Mentor, OH 44061-5039	Phone: 440-354-7007 Fax: 440-354-7080 dhbowden@ohtech.com	
Jim Linden Voting Member ✓	General Motors Research & Development 30500 Mound Rd./MC 480-106-160 Warren, MI 48090-9055	Phone: 586-986-1888  james.l.linden@gm.com	
Andy Ritchie Voting Member ✓	Infineum 1900 East Linden Ave. Linden, NJ 07036-0735	Phone: 908-474- Fax: 908-474-3637	Gordon has vote
Ron Romano Voting Member	Ford Motor Company 21500 Oakwood Blvd POEE Bldg Rm DR 167 MD 44 Dearborn, MI 48121-2053	Phone: 313-845-4068 rromano@ford.com	
John Rosenbaum Voting member	Chevron Global Lubricants	Phone:	
Leverett, Charlie Voting Member ✓	Intertek Automotive Research 5404 Bandera Road San Antonio, TX 78238	Phone: 210-647-9422 Fax: 210-523-4607 charlie.leverett@intertek.com	
Grundza, Rich Voting Member ✓	ASTM TMC 6555 Penn Ave. Pittsburgh, PA 15206-4489	Phone: 412-365-1034 Fax: 412-365-1047 Dml@tmc.astm.cmri.cmu.edu	
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Glaenger, David Voting Member ✓	Afton Research Center 500 Spring Street Richmond, VA 23218	Phone: 804-788-5214 Fax: 804-788-6358 Dave_Glaenger@ethyl.com	
Tracey King Voting Member	Chrysler	Phone: Fax: tek1@chrysler.com	
Sutherland, Mark Voting Member ✓	Chevron Oronite Company LLC 4502 Centerview Ste. 210 San Antonio, TX 78228	Phone: 731-5605 Fax: 731-5621 msut@chevrontexaco.com	
Robert Stockwell Voting Member	ConocoPhillips Lubricants R&D Passenger Car Engine Oil	office 580-767-6894 Robert.T.Stockwell@conocophillips.com	
Teri Kowalski Voting Member	Toyota	Phone: 734-995-4032 teri.kowalski@tema.toyota.com	

## ASTM SEQUENCE VI SURVEILLANCE PANEL

Name	Address	Phone/Fax/Email	Attendance
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### Guest Present at meeting

Adam & Jason Bowden ✓

~~Doyle Boese~~

~~Bill Buscher~~

Dan Worchester ✓

Gordon Farnsworth

Mike McMillan ✓

Phil Scinto ✓

~~Allison Rajakumar~~

~~Larry Hamilton~~

Jo Martinez ✓

~~Jim Rutherford~~

~~Gene Hammerly~~

Doug Deckman

~~Todd~~

Arthur Andrews



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Attachment 2

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# **Review of Sequence VID Engine Hour Adjustment and LTMS Targets**

**Jo Martinez  
July 27, 2009**

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# Summary

- 64 reference tests in 13 engines were analyzed
- Continue with current Engine Hour Adjustment
  - Engine hour is an important factor that explains the variability of FEI
  - Natural log transformation of Engine Hour gives similar precision as other possible transformations
  - Not enough data at < 500hrs and >3000hrs to conclude that current hour adjustment is not appropriate
- Keep current targets
  - Although there are 24 additional tests since the precision matrix, RMSE remains the same with these additional tests
  - Current targets and updated LSMeans are very similar; Mean SAFEI close to current targets

Oil	FEI1a LSMEAN	FEI2a LSMEAN	n	FEI1 Current	FEI2 Current	n	SAFEI1 Mean	SAFEI2 Mean
540 (A)	1.26	0.97	20	1.32	1.04	11	1.29	1.01
541 (D)	0.85	0.70	17	0.87	0.71	11	0.88	0.70
542 (X)	1.49	0.78	20	1.49	0.8	11	1.51	0.79

- Current targets are tied with current engine hour adjustment



## Data to date

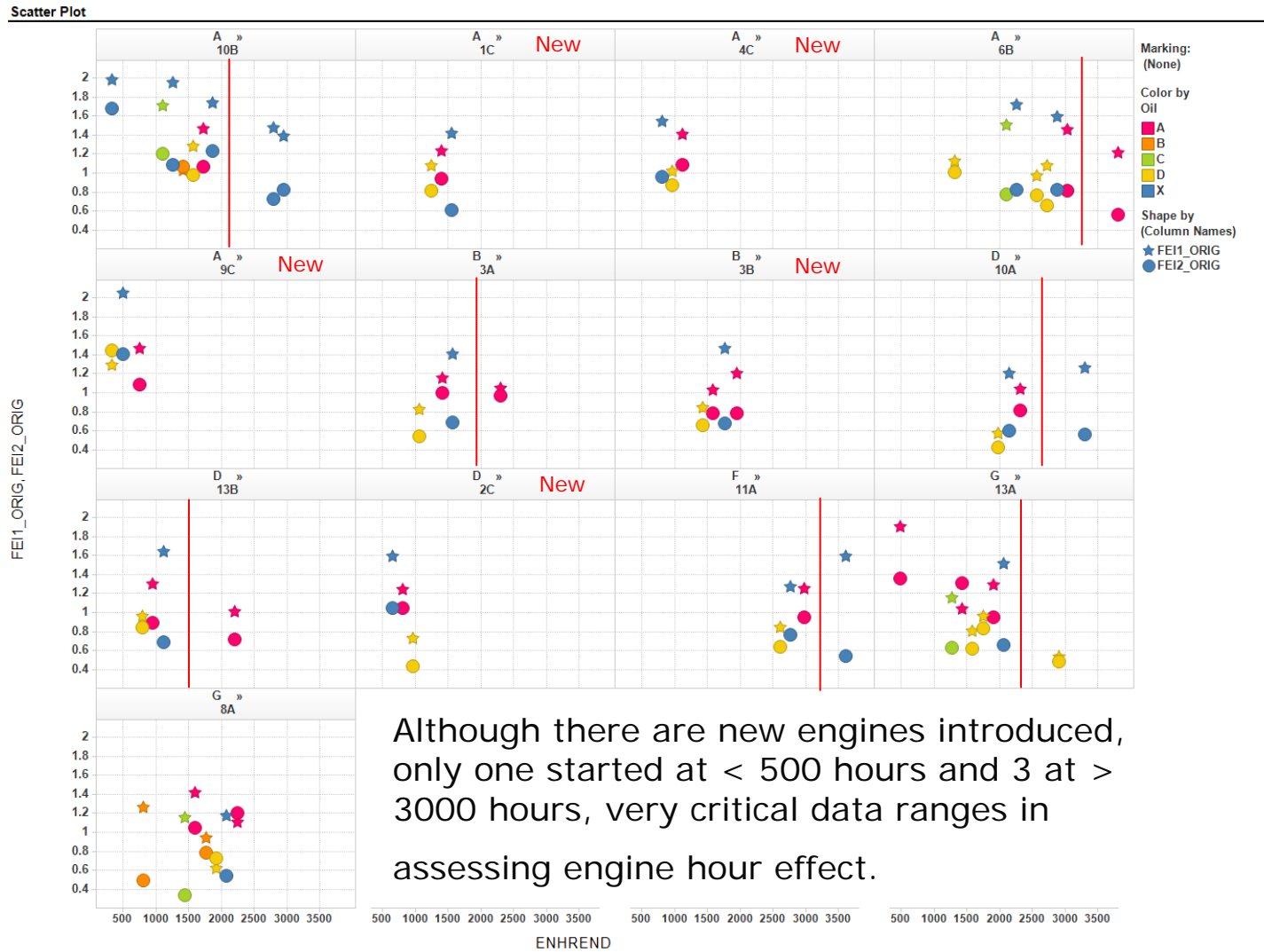
- 64 tests (40 in PM)
- 13 engines (8 engines in PM)
- 326 min engine hours (330 hours in PM)
- 3808 max engine hours (3029 hours in PM)
- Reference Oils (11 tests each oil in PM)
  - 540 (Oil A) – 20 tests
  - 541 (Oil D) – 17 tests
  - 542 (Oil X) – 20 tests

LTMSLAB	ENGNO	PM			Non-PM		
		No Runs	Min EnHrEnd	Max EnHrEnd	No Runs	Min EnHrEnd	Max EnHrEnd
A	10B	7	330	1869	2		2945
	6B	7	1315	3029	1		3808
	1C				3	1237	1548
	4C				3	803	1114
	9C				3	326	742
B	3A	3	1058	1570	1		2296
	3B				4	1427	1947
D	10A	3	1969	2309	1		3299
	13B	3	793.2	1110	1		2207
	2C				3	645	962
F	11A	3	2614	2971	1		3612
G	13A	7	486	2058	1		2908
	8A	7	810	2237			
Total	13	40			24		





# FEI Original by Engine

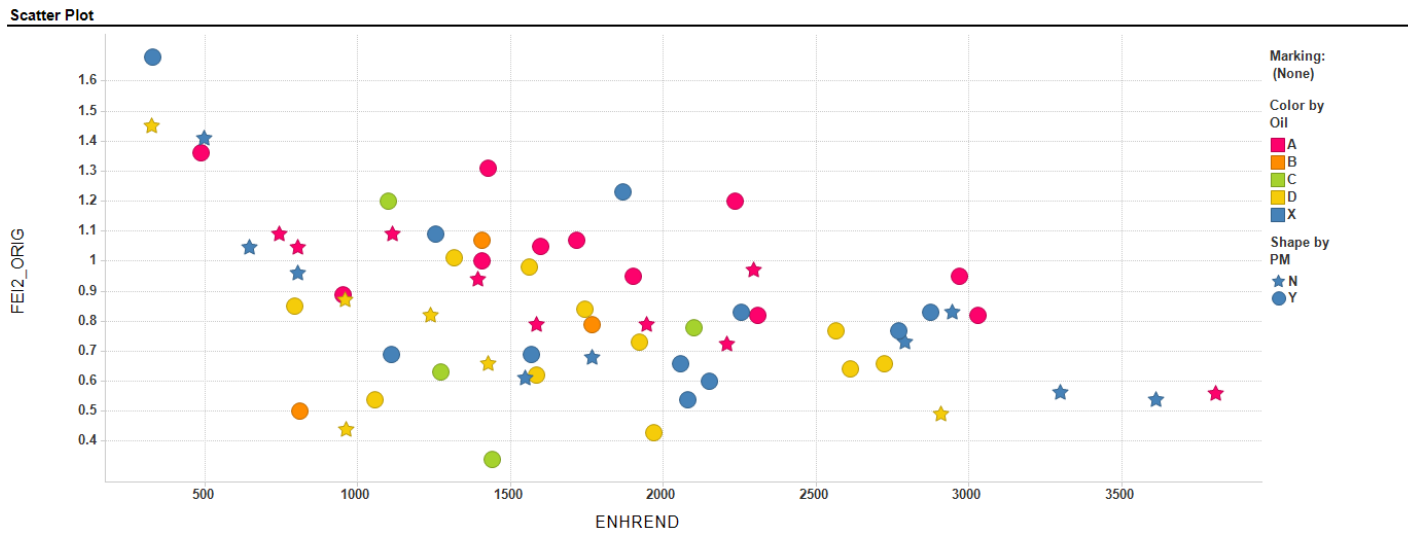
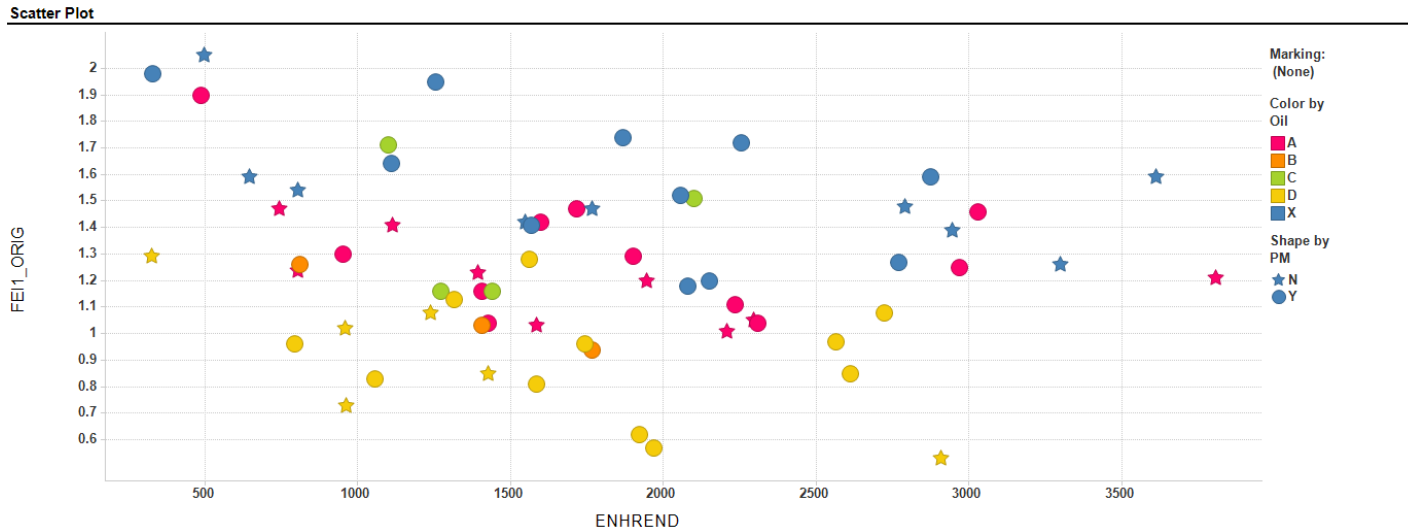


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# FEI Original by Engine Hours

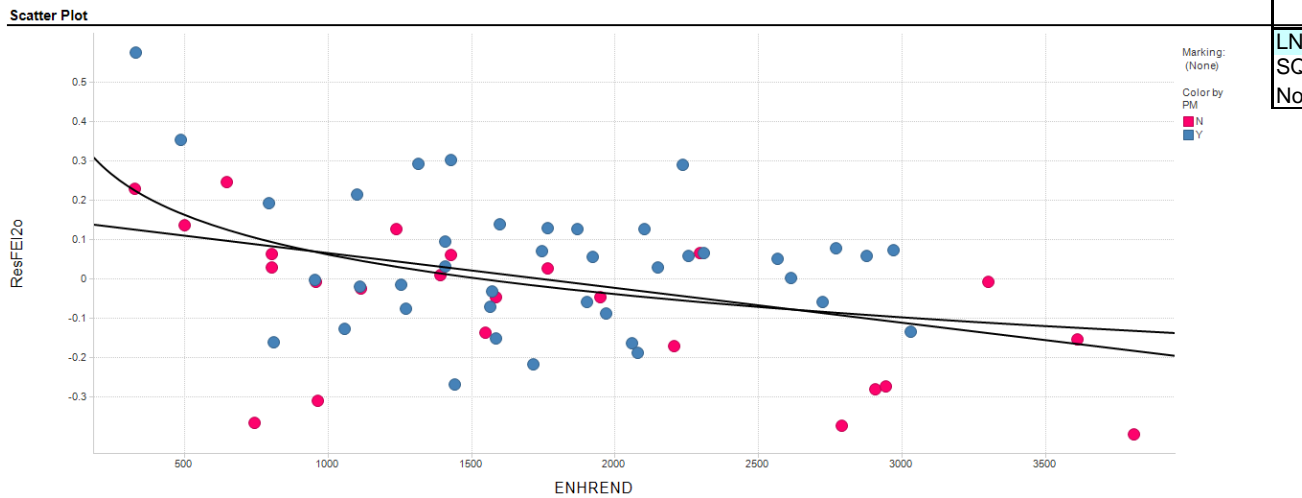
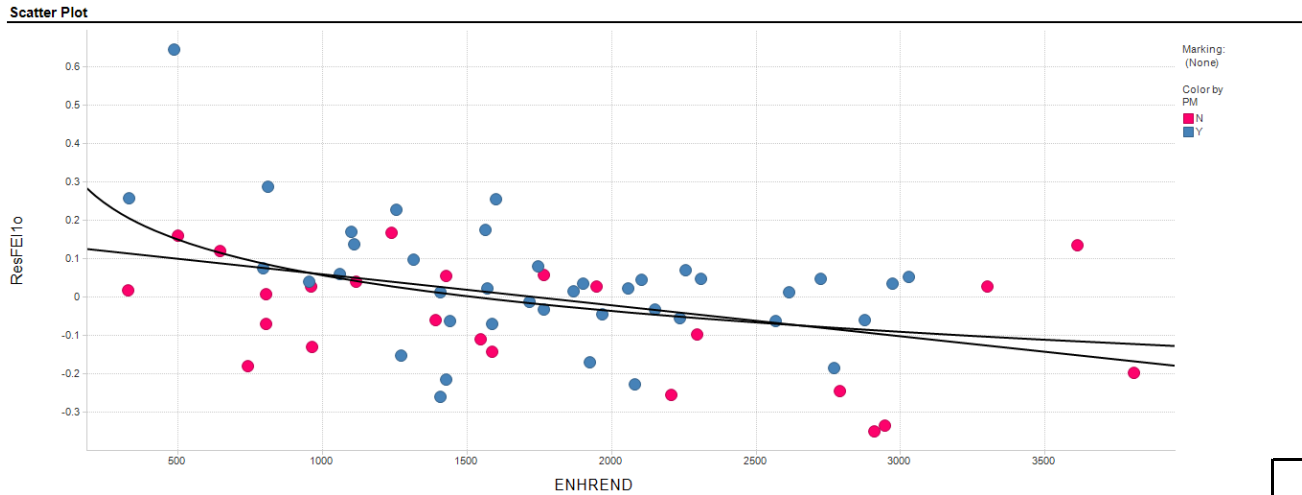


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# FEI Residuals by Engine Hours



Engine Hour Adjustment	RMSE	
	FEI1	FEI2
LN	0.1353	0.1578
SQRT	0.1356	0.1596
No Transform	0.1422	0.1636

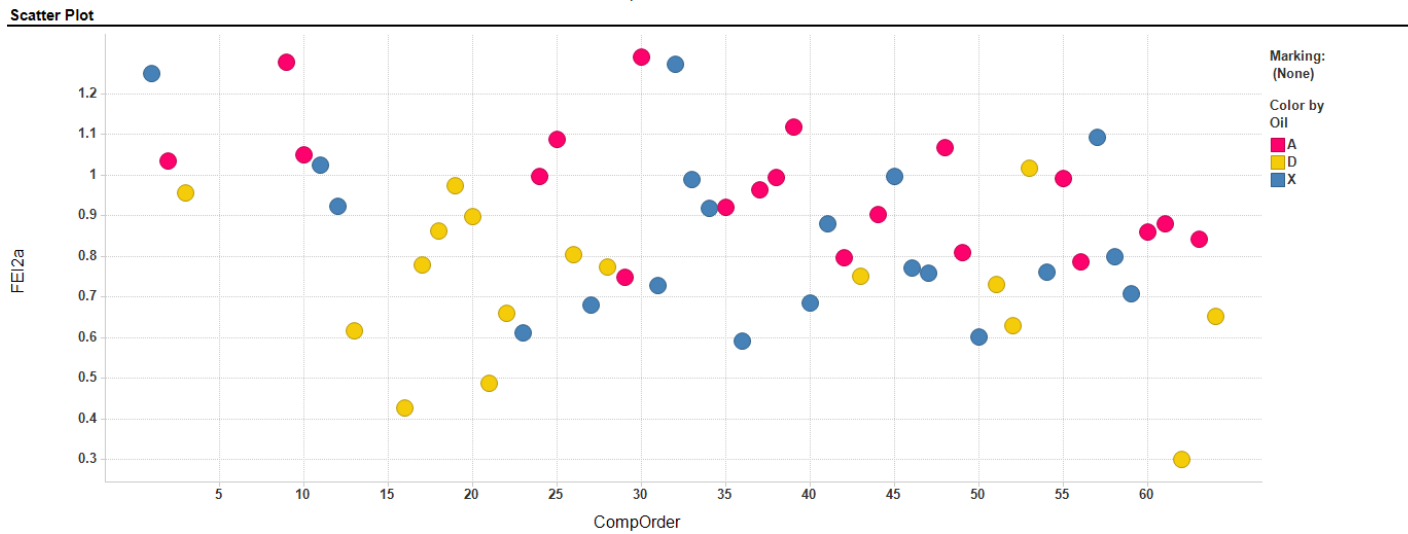
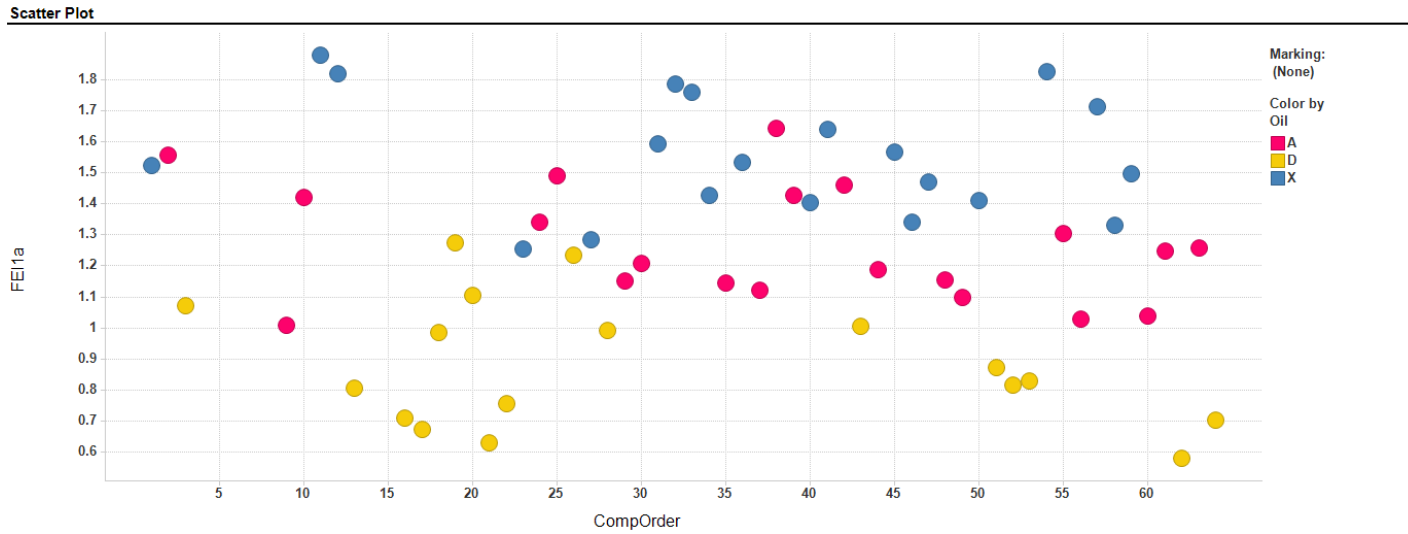
Engine Hour is an important factor that explains the variability in FEI.

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# Hour Adjusted FEI



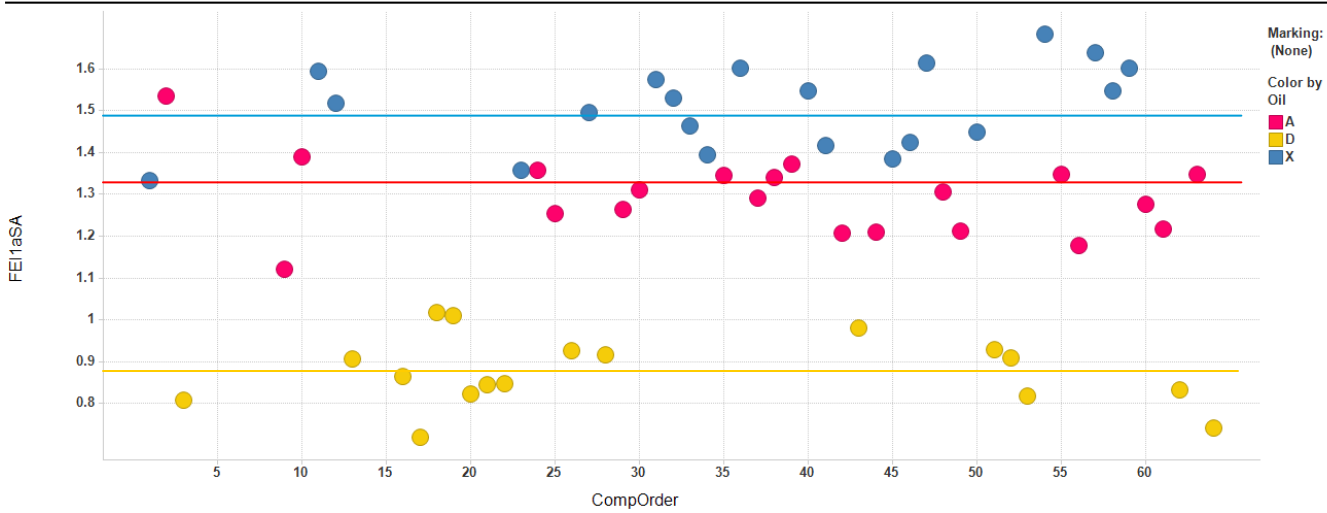
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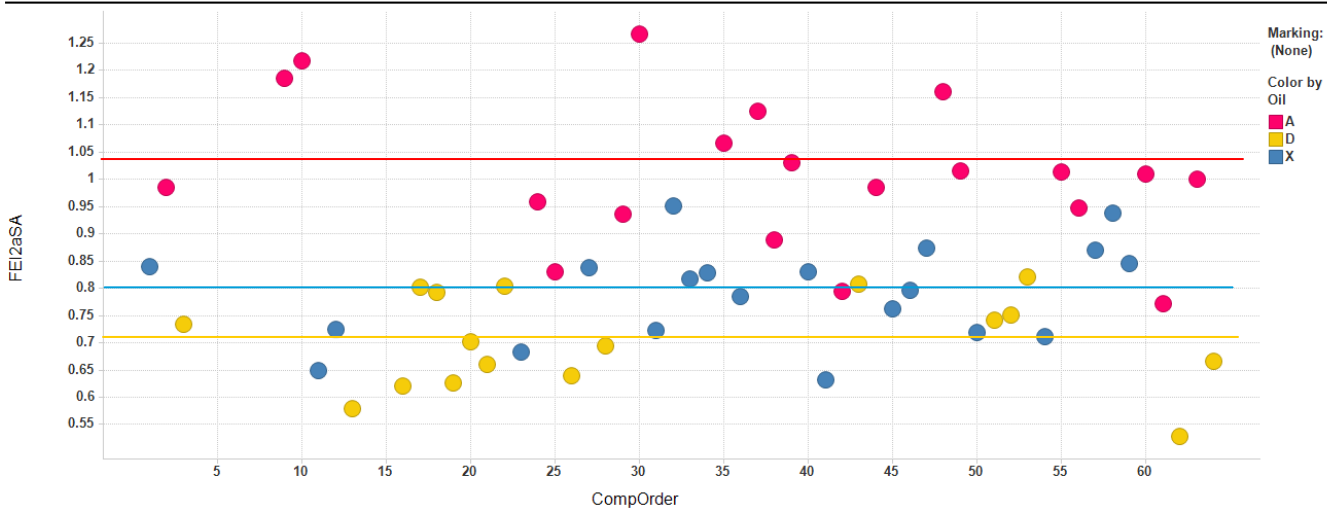
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# Severity Adjusted FEI

Scatter Plot



Scatter Plot



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